

Claims

[c1] What is claimed is:

1.A method of printing an image on a printing medium with an inkjet printing device, the method comprising:
providing data representative of an original image;
calculating a total heat weighting value for the original image to indicate a degree of heat accumulation for the original image;
comparing the total heat weighting value to R distinct reference values, R being an integer greater than or equal to one;
selecting M image masks to be used to mask the original image, wherein a value of M is chosen according to comparison results between the total heat weighting value and the R reference values, M being an integer greater than or equal to one;
masking the original image with the M image masks to produce M sub-images; and
printing the M sub-images successively on the printing medium with a plurality of nozzles for superimposing the M sub-images on the printing medium, whereby the original image is printed on the printing medium.

- [c2] 2.The method of claim 1 wherein selecting M image masks comprises reading the M image masks from a table memory.
- [c3] 3.The method of claim 1 wherein the M image masks are generated according to a predefined algorithm.
- [c4] 4.The method of claim 3 wherein the predefined algorithm comprises:
- (a1)choosing every M^{th} nozzle to be included in a first mask;
 - (a2)repeating step (a1) for selecting a second mask through an $(M-1)^{\text{th}}$ mask, wherein nozzles that were previously chosen to be included in other masks are not included in any additional masks; and
 - (a3)choosing all remaining nozzles to be included in an M^{th} mask.
- [c5] 5.The method of claim 3 wherein the predefined algorithm comprises:
- (b1)choosing contiguous groups of N nozzles to be included in a first mask, wherein each group of N nozzles included in the first mask is separated by $(M-1)*N$ nozzles not included in the first mask, N being an integer greater than or equal to one;
 - (b2)repeating step (b1) for selecting a second mask through an $(M-1)^{\text{th}}$ mask, wherein nozzles that were pre-

viously chosen to be included in other masks are not included in any additional masks; and

(b3)choosing all remaining nozzles to be included in an M^{th} mask.

[c6] 6.The method of claim 3 wherein the predefined algorithm comprises:

(c1)choosing a current nozzle to be included in the first mask;

(c2)analyzing a group of M nozzles closest to the current nozzle, wherein the group of M nozzles have not been previously chosen or analyzed for inclusion in the first mask;

(c3)selecting among the group of M closest nozzles a next nozzle which is farthest away from the current nozzle, and choosing the next nozzle to be included in the first mask;

(c4)repeating steps (c2) and (c3) until all nozzles have been analyzed, wherein each next nozzle is treated as the current nozzle after the next nozzle has been chosen to be included in the first mask;

(c5)repeating steps (c1) through (c4) for selecting a second mask through an $(M-1)^{\text{th}}$ mask, wherein nozzles that were previously chosen to be included in other masks are not analyzed for inclusion in any additional masks; and

(c6)choosing all remaining nozzles to be included in an M^{th} mask.

[c7] 7.The method of claim 1 wherein the total heat weighting value is calculated according to locations of the pixels to be printed and a heat weighting look-up table.

[c8] 8.The method of claim 1 wherein the total heat weighting value is a sum of heat weighting values calculated for each row of nozzles contained in a printhead of the inkjet printing device.

[c9] 9.The method of claim 8 wherein the total heat weighting value is calculated before each swath that the printhead makes over the printing medium.

[c10] 10.The method of claim 1 wherein M is less than or equal to $R+1$.

[c11] 11.The method of claim 1, wherein the inkjet printing device is an inkjet printer having a printhead comprising a plurality of nozzles to jet ink droplets on the printing medium so as to form the image on the printing medium.

[c12] 12.The method of claim 1, wherein the data representative of the original image is gray-scale image data.

[c13] 13.The method of claim 1, wherein the data representa-

tive of the original image is color image data.